



Efficiency Standards Office

Blueprint

Winter 1995/96, No. 54

California Energy Commission

RESIDENTIAL STANDARDS

Questions and Answers

Q *If I want to add a water heater as part of my addition, am I limited as to a specific compliance approach such as existing-plus-addition?*

It will depend on the proposed water heating system. For permits issued since July 1995, you can add a water heater and use an "addition alone" compliance approach under two conditions:

1. The new water heater is:
 - a. Gas storage non-recirculating, 50 gallons or less, with R-12 external insulation.
 - b. *Provided there is no natural gas connected to the building* it can be electric storage, 50 gallons or less with an energy factor ≥ 0.90 , with R-12 external insulation.
2. No penalty/no credit is taken for water heating in the compliance documentation (i.e., "standard" system is modeled in computer program, 0 points are assumed in the point system, or if using prescriptive compliance there is no need to demonstrate compliance with the water heating budget.) (*Energy Efficiency Standards*, Section 152(a), Exception No. 3.)

At the present time, if you are using a system with features other than those described in a. or b. above, you must use an existing-plus-addition compliance approach. For future reference, the standards also allow a system determined by the Executive Director of the Energy Commission to use no more energy than a. or b. above. The *Residential Manual*

errata (expected after the first of the year) will include alternative water heating systems which can be used with addition-alone compliance.

Q *I am using computer compliance for a new residence with two rooms in a separate building. Should I model these as separate buildings, each meeting compliance with the standards?*

No. Modeling as separate buildings skews the water heating energy, water heating credits, and internal gains. Model the residence, including the detached building, as one dwelling unit. Be sure to include all exterior surfaces of both buildings.

Q *Do the energy requirements of Title 24, Part 6, apply to an addition to a mobile home?*

No. Title 25 requirements, not Title 24, govern mobile homes, including additions to the unit. Jurisdiction in a mobile home park comes under the authority of Housing and Community Development. Jurisdiction of a mobile home on private property may come under the authority of the local building department.

Q *I'm preparing a Form 3R for a wall assembly. What is the correct condition for the outside surface of the wall which separates the garage from the house?*

The correct condition is an inside air film or still air for a wall separating conditioned space from enclosed unconditioned space. The form will show both inside and outside surface air films as 0.68 (*Residential Manual*, p. G-37).

(continued on page 2)

Questions and Answers (continued)

Q *In accounting for the thermal mass effects for a slab-on-grade floor, can I account for the thicker slab at grade beams or stem walls?*

No. As these are assumed to be standard for a slab, no additional credit can be taken for these thicker portions. If two slabs in a building are of different thickness, the two slabs could be weight averaged. For typical conditions, however, the entire slab thickness is 3-1/2 inches.

Q *There is a new occupancy group R classification in the California Building Code—Division 2 for care homes (residential facilities and residential care facilities for the elderly). Which standards apply to these occupancies?*

Although this new occupancy group is not defined in the *Energy Efficiency Standards*, the scope of the Standards includes all R occupancies (Section 100). Any R-2 occupancy with three or fewer habitable stories must comply with the low-rise residential standards. High-rise residential standards apply to an R-2 occupancy with four or more habitable stories.

Q *What framing factor should I use for wood joist I-beams with wood webs and wood flanges?*

Use the nominal dimensions and treat these beams like typical lumber (i.e., 2x4, 2x8).

NONRESIDENTIAL STANDARDS

Questions and Answers

Q *Does changing the occupancy of a building require compliance with the current energy requirements for the new occupancy?*

Only features or components which are altered must comply with the requirements of the new occupancy (*Nonresidential Manual*, Section 2.2.7.)

Q *A mechanical engineer is proposing a 12-ton mechanical cooling system (air cooled, air conditioner) for a new commercial building. Since this is over the 135,000 Btu/hr capacity regulated by the Appliance Efficiency Regulations, what efficiency requirements apply?*

Section 112 (Table 1-C) of the *Energy Efficiency Standards* requires an 8.5 EER and 7.5 IPLV (integrated part load value). Since this equipment is not required to be certified to the California Energy Commission, manufacturer's literature is sufficient to verify these efficiencies.

Q *I've noticed the Uniform Building Code (UBC) references in the 1995 Nonresidential Manual are incorrect if I'm using the current UBC. Should I be using an older version of the UBC?*

No. The current state-adopted version of the UBC (1995 *California Building Code*) is the correct reference document. The *Energy Efficiency Standards* references to the *Uniform Building Code* contain the correct/updated references. The *Nonresidential Manual* was printed before staff was aware of the need to make such changes. The errata to the manual (expected after the first of the year) will correct these UBC references.

Q *When is demising wall insulation required? and how much insulation is required?*

Demising wall insulation (R-11) is a mandatory requirement for framed walls (*Energy Efficiency Standards*, Section 118(e)). Therefore, any time envelope compliance is required, these walls separating conditioned and unconditioned space must be insulated to R-11.

Q *When does an alteration to a mechanical system require that I install an economizer?*

Since an economizer is not a mandatory requirement, alterations to *components* of an existing mechanical system do not require the installation of an economizer.

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Questions and Answers (continued)

Alterations which consist of adding a *new system* must install an economizer when two conditions are met: (1) the new system has a design supply capacity that is greater than 2500 cfm and over 75,000 Btu/hour of mechanical cooling capacity; and (2) compliance is demonstrated using the prescriptive approach (Energy Efficiency Standards, Section 144). [NOTE: If performance compliance is used for the new system, an economizer is required only if one is modeled as part of compliance.]

DID YOU KNOW . . . ?

Designer Signature Requirements

• • • An AIA newsletter recently published a useful article concerning the *Business and Professions Code* requirements governing the preparation of plans (and ultimately the designer's signature requirements on the certificate of compliance) [NOTE: the documentation author is not subject to requirements of the *Business and Professions Code*]. The article [reprinted as an insert with the author's permission] provides information about the designer's qualifications and exemptions within that code for specific types of projects. Since the practice of architecture is governed by the *Business and Professions Code* and building officials carry out the requirements of the code, the Energy Commission feels confident in sharing this article.

Nonresidential Computer Program

• • • COMPLY 24, versions 4.11 and 4.20 are decertified *for nonresidential compliance only* effective March 31, 1996. After that date, COMPLY 24, version 5.0 will be required for nonresidential performance compliance. [NOTE: Versions 4.10, 4.11, 4.20 and version 5.0 are all valid for residential compliance.]

The Computer Age

• • • The Energy Commission has a home-page ("Access Energy") on the World Wide Web.

The address is <http://www.energy.ca.gov/energy/> and the web administrator, Bob Aldrich, can be contacted by e-mail (boba@energy.ca.gov) or by telephone [(916) 654-4993]. Some of the documents currently available are *Blueprint*, several of the *Energy Specs* (fact sheets), and the *Home Energy Manual* (P400-92-031), which can be down loaded with graphics. The web site is expanding and you will soon find other information on the *Energy Efficiency Standards*.

• • • The directories of certified appliances are accessible by modem 24-hours a day through the electronic bulletin board service (BBS). You can access them free of charge by dialing (916) 654-4069. Features include:

- On-line registration and authorization for full access within two working days
- Two 14,400-baud modems
- Ability to tag individual files and to batch download selected files
- Option to download a DOS- or Windows-based unzipping utility program
- Option to download files in the following formats: unstructured ASCII, common delimited, and database (.DBF) file format
- Downloaded information can be displayed on the user's database or spreadsheet program

Standards' Accomplishments

• • • Since their inception, the *Energy Efficiency Standards* have saved \$13 billion (net savings). As a result of more efficient buildings, lighting, appliances, agricultural practices and motors, the U.S. Department of Energy notes that California has the sixth lowest energy use per capita in the country.

Today, California ranks 46th among the states in annual energy expenditures per person. This means that a California family of four pays **\$1,012** less than the average U.S. family, and **\$6,936** less than a family in Wyoming (the highest ranking state). Spending less on energy means more household income for purchasing goods and services, an important note for businesses.

(continued on back page)

DID YOU KNOW (continued)

Effective business owners recognize that dollars saved on energy costs translate into lower operating costs, and new or expanded products, services and jobs—an important step toward improving the economy. California ranks 49th in energy costs per dollar of Gross State Product, spending 6 cents of our output (Gross State Product) on energy, compared with 7.8 cents for the national average.

Index Updates

• • • You need to update your nonresidential *Blueprint* index—mailed with issue 52.

- (1) Change the four references to “demising wall insulation” and “wall insulation” preceded by “‡” from issue 48 to issue 54.
- (2) Change the reference for “drop ceilings” (also preceded by “‡”) from issues 44 and 45 to issue 53.
- (3) Remove the “‡” symbols.

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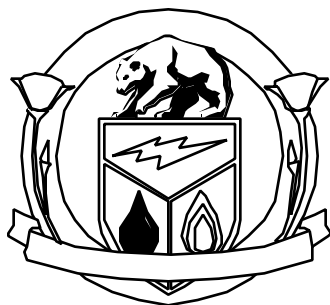
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Policy Statement: Signatures on Building Plans*

Provided by the Greg Lamb,
*Yosemite Chapter of the International Conference
of Building Officials*

Purpose

To clarify when and to what extent signatures are required.

Background

The State of California Business and Professions Code establishes levels of building complexity at which design professionals are required to certify the safety of any building by affixing their signatures and license numbers on the plans and calculations. The Business and Professions Code Section 5536.2 also requires agencies who issue building permits to determine that the person(s) signing plans submitted for approval is appropriately registered or licensed. Section 302(b) of the Uniform Building Code indicates that a Building Official may require plans and calculations to be prepared and designed by an engineer or architect licensed in the State of California. WHO MAY PREPARE PLANS (Attachment #1) provides additional guidance in determining who may prepare plans for permit issuance by this Division (*see story to right*).

Policy

1. All final plans, specifications, reports and calculations for buildings or structures which are not exempt under Attachment #1 shall be prepared by a licensed engineer or architect and, at the time of permit issuance, shall include information from the persons in responsible charge of the work as follows:

<u>Person in Charge:</u>	<u>Plan Requirements:</u>
<i>Civil Engineer, Soils Engineer and Structural Engineer</i>	Wet Signature Stamp or Seal License Number Renewal Date of License

*Source: ARCHITALKTURE, the newsletter of the American Institute of Architects/Sierra Valley Chapter, April/May 1995 issue.

Person in Charge:

Architect

*Electrical or
Mechanical Engineer*

Plan Requirements:

Wet Signature
Stamp or Seal
License Number
Renewal Date of License

Wet Signature
Stamp or Seal
License Number
Renewal Date of License

All persons who prepare instruments of services for others shall sign those instruments. When only portions of a building are engineered, the design engineer/architect must still sign the applicable pages of the plans and the calculations with a wet signature.

2. When plans, calcs, specifications, etc., are signed by an architect, the counter staff shall verify the license status by checking the architects roster or by calling the Architectural Examiners Board at (916) 445-3363. For questions regarding the registration status of an engineer, call the Engineers Board at (916) 920-7425.

Policy Statement: Who May Prepare Plans

ATTACHMENT #1

Section 302(b) of the Uniform Building Code indicates that the Building Official may require plans, computations and specifications to be prepared and designed by an engineer or architect licensed by the State to practice as such.

In accordance with the provisions of the California Business and Professions Code, the plans, specifications and calculations for all buildings and structures shall be prepared under the direction of, and signed by a person certified by the State of California as a registered civil engineer or licensed architect. Structural and soils engineers are civil engineers with the authority to use their respective titles. Any person(s) who practices electrical or mechanical engineering shall be registered accordingly in the State of California.

(continued)

ATTACHEMENT #1 (Continued)

The following exemptions to the above requirements may be permitted, unless the buildings and structures are determined by the Building Official to be of an unusual nature, or where the structural stability or the safety of such buildings or structures is not evident to the Building Official. Engineering calculations and the signature of a registered engineer or licensed architect may be required in such cases.

Exemptions for Unlicensed Persons

(Reference B&P Code, Sections 5537, 5538, 6737.1, 6745)

1. The following types of residential work, if conforming substantially to conventional framing requirements of UBC Section 2517 may be prepared by any person:
 - A. Single family dwellings not more than two stories in height;
 - B. Multi-family dwellings not more than two stories in height, having not more than four attached dwellings and not more than four dwellings per lot, including not more than four attached row house dwelling units on separate lots;
 - C. Woodframe garages and other structures appurtenant to A and B above; and
 - D. Woodframe agricultural and ranch buildings, unless the Building Official deems that an undue risk to the public health, safety or welfare is involved.
2. The following types of commercial tenant improvement work may, subject to the discretion of the Building Official, be prepared by any person in accordance with applicable codes.
 - A. Non-structural storefronts.
 - B. Fixtures and cabinets.
 - C. Small partitions not over 5'9" high.
 - D. Residential and agricultural buildings, when in compliance with UBC, Section 2517.

3. The following improvements necessitate a licensed designer:

- A. Structural modifications to an existing non-residential building or new non-residential construction.
- B. Non-structural modifications to the existing building or new construction.
 1. One-hour corridors.
 2. Area separation walls and fire-rated assemblies.
 3. Occupancy separation walls and fire rated assemblies.
 4. Existing systems designed for "A"
 5. Change in occupancy to a more restrictive use.

Exemptions for Licensed Contractors

(Reference B&P Code Section 6734.4.

Contractors licensed in California are not prohibited from designing mechanical and electrical systems of facilities for work to be performed by a contractor within the classification for which his/her license is issued. Nothing in this section is intended to imply that a licensed contractor may design work to be installed by others.